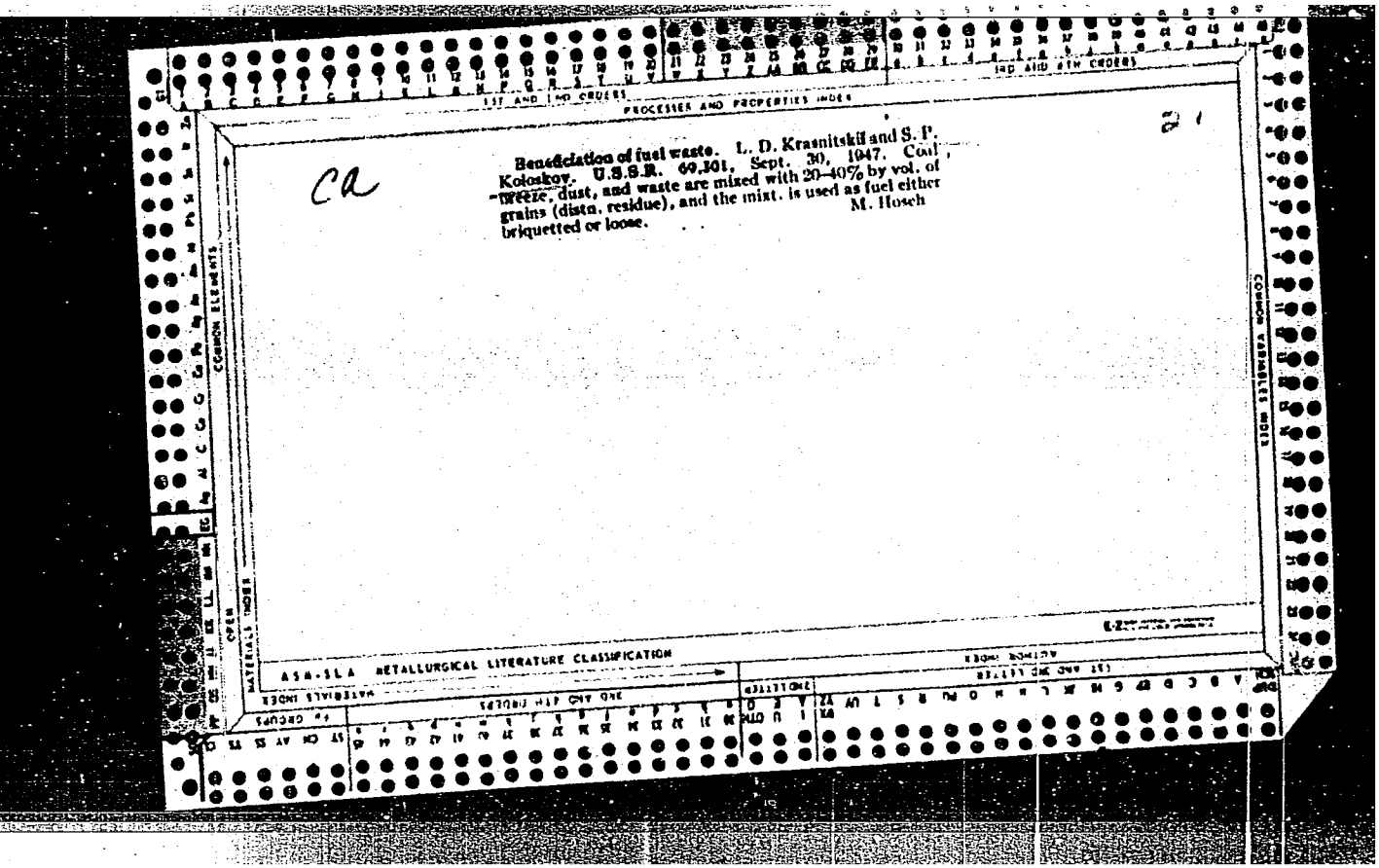
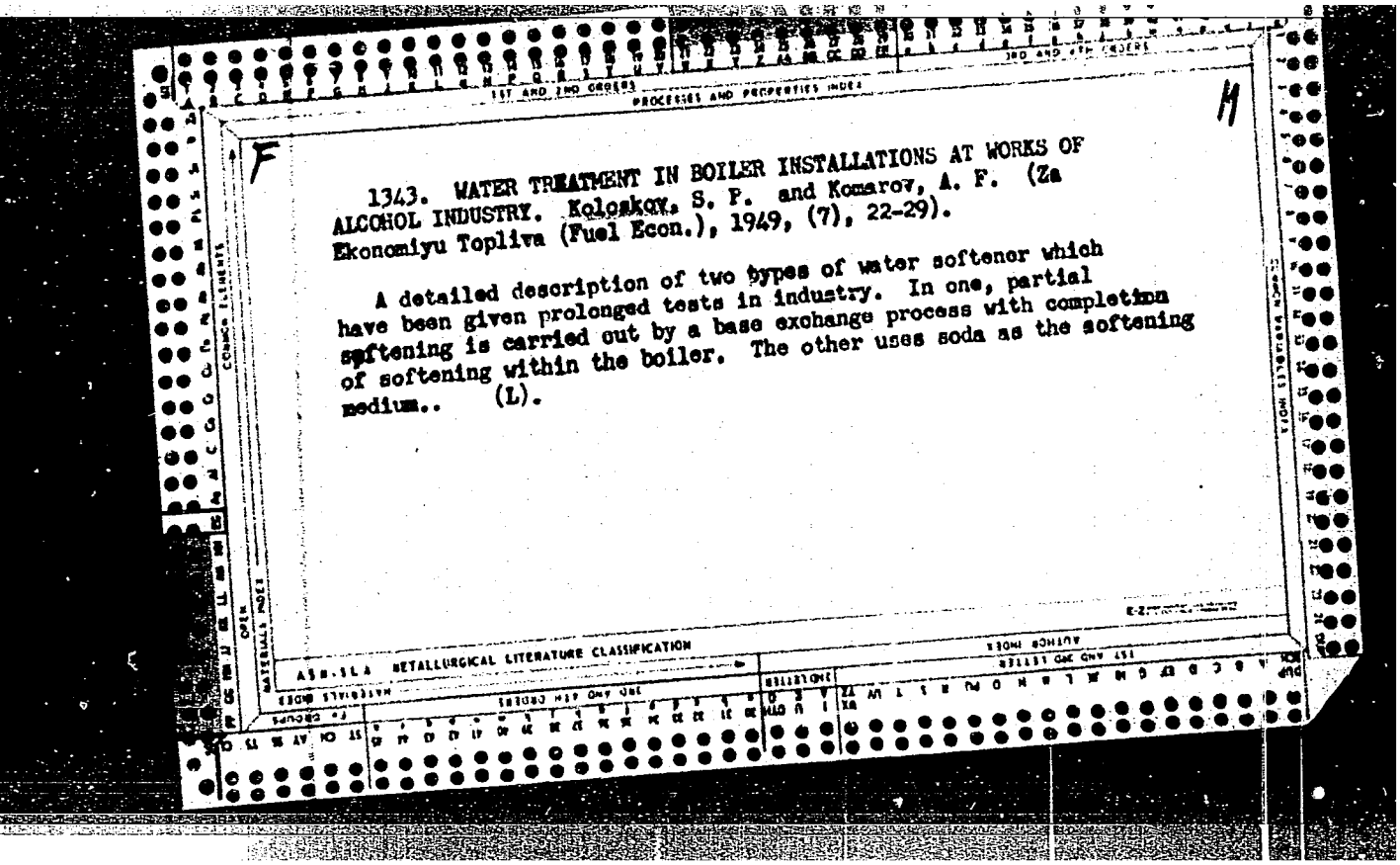


CA

21

Beneficiation of fuel waste. L. D. Krasnitskii and S. P. Koloskov. U.S.S.R. 69,101, Sept. 30, 1947. Coal breeze, dust, and waste are mixed with 20–40% by vol. of grains (distn. residue), and the mixt. is used as fuel either briquetted or loose. M. Hosch



1343. WATER TREATMENT IN BOILER INSTALLATIONS AT WORKS OF ALCOHOL INDUSTRY. Kolosskov, S. P. and Komarov, A. F. (Za Ekonomiyu Topliva (Fuel Econ.), 1949, (7), 22-29).

A detailed description of two types of water softener which have been given prolonged tests in industry. In one, partial softening is carried out by a base exchange process with completion of softening within the boiler. The other uses soda as the softening medium.. (L).

KOLOSKOV, S.P.: LUR'YEV, M.A., retsenzent; KUZNETSOV, N.M., spetsredaktor; KHMEL'NITSKAYA, A.Z., redaktor; TORLIB, E.M., tekhnicheskiy redaktor

[Boiler installations of food industry plants; design and operation] Kotel'nye ustanovki predpriiatii pishchevoi promyshlennosti; ustroistvo i ekspluatatsiia. Moskva, Pishchepromizdat, 1954. 330 p. [Microfilm] (MLRA 8:3)

(Steam boilers)

Koloskov, S. P.

Koloskov, S. P., and Komarov, A. F.: Teplosilovoe khozyaistvo i tiplovaya apparatura spirtovykh zavodov (Thermal Power and Thermal Apparatus in Alcohol Plants). Moscow: Pishchepromizdat. 1954. 459 pp.

2

RAYEV, Z.A.; FERTMAN, G.I.; KOLOSKOV, S.P.

Introduction of working methods of innovators at the Plavsk distilling plant. Spirt.prom. 20 no.2:28-31 '54. (MLRA 7:6)
(Plavsk--Liquor industry) (Liquor industry--Plavsk)

KOLOSKOV, S.P.

The improvement of the water purificrs of the VNIISP (All-Union Sci. Research Inst. Alcohol Ind.). S. P. Koloskov. *Spirtovaya Prom.* 21, No. 2, 15 (1955). Water purification improvements, such as the use of [illegible] ... [illegible] used there shows a residual hardness of [illegible] mg equiv./l., with an alkalinity of 1.5-2 meq./l. W. [illegible]

KOLOSKOV, Sergey Pav.

KOMAROV, Avramiy Fedorovich; KOLOSKOV, Sergey Pavlovich; KUZNETSOV, N.M., spetsredaktor; KHMEL'NITSKAYA, Kh.Z., redaktor; SEMEGIN, P.V., kandidat tekhnicheskikh nauk, retsenzent; KISINA, Ye.I., tekhnicheskiy redaktor.

[Mechanization of labor consuming operations in distilleries] Mekhanizatsiia trudoemkikh rabot na spirtovykh zavodakh. Moskva, Pishchepromizdat, 1957. 173 p. (MLRA 10:6)

(Distilling industries)

KOMAROV, A.F.; KOLOSKOV, S.P.

Means for increasing the supply of electric energy in alcohol plants. Spirt. prom. 23 no.3:12-17 '57. (MLRA 10:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut spirtovoy promyshlennosti.
(Boilers) (Distilling industries--Equipment and supplies)

Koloskov, S.P.

KOMAROV, A.F.; KOLOSKOV, S.P.

Turbulent-type furnace using milled peat. Spirt.prom. 23 no.6:23-27 '57. (MIRA 10:12)

(Furnaces)

KOMAROV, A.F.; KOLOSKOV, S.P.

Technological modification of the vortex furnace designed by the All-Union Research Institute of the Distilling Industry to operate in milled peat. Trudy TSNIISP no.6:187-195 '58. (MIRA 14:12)
(Furnaces) (Distilling industries--Equipment and supplies)

KOLOSKOV, S.P.; KOMAROV, A.F.

Selecting the types of steam engines and steam boilers for distilleries. Trudy TSNIISP no.7:105-118 '59. (MIRA 13:9)
(Distilleries--Equipment and supplies)

KOLOSKOV, S.P.

Use of the surface culture of mold fungi in the distilling industry. Trudy TSNIISP no. 8:61-69 '59. (MIRA 14:1)
(Fungi) (Distilling industries)

KOLOSKOV, S.P.; LOSEV, N.A.

Automatic proportioning of grain and water by a feed mechanism attached to the unit for the continuous cooking of starchy raw materials. Spirt. prom. 25 no.5:17-20 '59. (MIRA 12:10)
(Alcohol)

KOLOSKOV, S. P.; ZOLOTOV, Yu. I.

Mechanized washing of fermentation tanks. Spirt. prom. 29 no.3:24-26 '63. (MIRA 16:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut fermentnoy i spirtovoy promyshlennosti.

(Fermentation—Equipment and supplies)

KOLOSKOV, S.P.; RODZEVICH, V.I.

From the work practices of the distilling industries in Czechoslovakia. Spirt. prom. 28 no.7:15-19 '62. (MIRA 17:2)

1. TSentral'nyy nauchno-issledovatel'skiy institut spirtovoy i likero-vodochnoy promyshlennosti.

KOLOSKOV, S.P.; KOMAROV, A.F.; SAVVINA, A.P.; SERGEYEVA, N.M.; MOSKVICHEVA E.P.; Prinimali uchastiye: DAVYDOVSKAYA, N.G.; NIKITINA, R.Ya.; PILLER, Ya.Ya.

Yeast generator with self-aeration. Ferm.i spirt.prom. 31 no.1:26-28 '65. (MIRA 18:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut fermentnoy i spirtovoy promyshlennosti (for all except Davydovskaya, Nikitina, Piller). 2. Glavnyy inzh. Rakvereskogo spirtozavoda (for Piller).

KALUNYANTS, K.A.; KOLOSKOV, S.P.; GOLGER, L.I.

Growing of mold fungi cultures in a system VIS-42-D drying apparatus. Ferm. i spirt.prom. 31 no.5:7-9 '65.

(MIRA 18:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut fermentnoy i spirtovoy promyshlennosti.

KALUNYANTS, K.A.; KOLOSKOV, S.P.; GOLGER, L.I.; YEVTIKHOV, P.N.

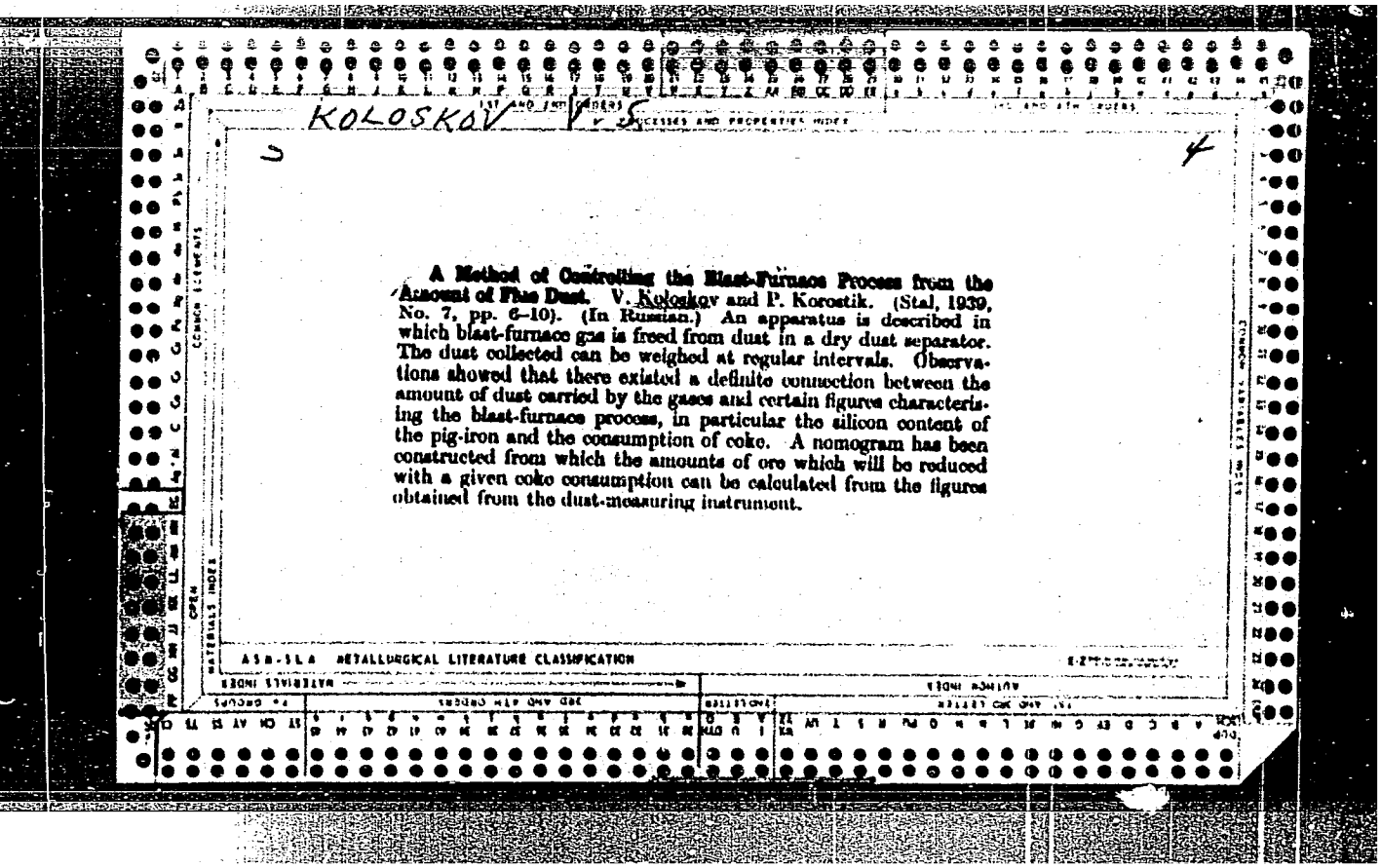
Growing of mold fungi cultures in the SPK steam dryer. Ferm. i spirt. prom. 31 no.6:4-5 '65. (MIRA 18:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut fermentnoy i spirtovoy promyshlennosti.

KOLOSKOV, V.

"Change in the Physicochemical Properties of Soils in Relation to Contour and Mixed Grass Crops in the Tatar Nonchernozem Zone." Cand Biol Sci, Kazan' State U, Kazan', 1953. (RZhBiol, No 7, Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55



KOLOSKOV V. S.

5

4

A Method of Controlling the Blast-Furnace Process from the Amount of Flue Dust. V. Koloskov and P. Korostik. (Stal, 1939, No. 7, pp. 6–10). (In Russian.) An apparatus is described in which blast-furnace gas is freed from dust in a dry dust separator. The dust collected can be weighed at regular intervals. Observations showed that there existed a definite connection between the amount of dust carried by the gases and certain figures characterising the blast-furnace process, in particular the silicon content of the pig-iron and the consumption of coke. A nomogram has been constructed from which the amounts of ore which will be reduced with a given coke consumption can be calculated from the figures obtained from the dust-measuring instrument.

A 5 8 - 5 L A METALLURGICAL LITERATURE CLASSIFICATION

KOLOSKOV, V.S.; VOLOBUYEV, V.I.

Repairing profile rolling mill equipment during short breaks in operation. Stal' 15 no.2:184-185 F '55. (MLRA 8:5)

1. Stalinskiy metallurgicheskiy zavod.
(Rolling mill machinery--Repairing)

KOLOSKOV, V.S. (Saratov, ul. Lenina, d.92, kv.20)

Uneiform osteochondropathy of the vertebral bodies. Ortop. travm. protez. 24 no.7:55-57 Jl '63 (MIRA 17:2)

1. Iz rentgenologicheskogo otdeleniya Saratovskogo instituta travmatologii i ortopedii (dir. - dotsent Ya.N.Rodin).

KOLOSKOV, Yu.P.

Stabilization system of the angular velocity of an electric motor. Geofiz. prib. no.20:74-82 '64. (MIRA 18:9)

1. Osoboye konstruktorskoye byuro Gosudarstvennogo geologicheskogo komiteta SSSR.

L 14648-66 EWT(d)/EWT(l)/EWP(l) IJP(c) BB/GG/GW
ACC NR: AT6004297 (N) SOURCE CODE: UR/3175/65/000/026/0074/0077

AUTHOR: Neymark, G. S.; Koloskov, Yu. P. 61 B+1

ORG: none

TITLE: Increasing the accuracy and speed of analog-digital converters 16,44

SOURCE: USSR. Gosudarstvennyy geologicheskiy komitet. Osoboye konstruktorskoye byuro. Geofizicheskaya apparatura, no. 26, 1965, 74-77

12,44,55 12,44,55

TOPIC TAGS: analog digital converter, geophysics, digital system, computer circuit, transistor, vacuum tube

ABSTRACT: The authors consider the various factors which affect the speed of converting a continuous parameter into digital form in an attempt to improve equipment for digital recording of geophysical data. It is shown that fixing the signal level throughout the time of conversion is the optimum method for reducing errors due to the rate of change in the signal being converted at a given converter speed. The level of the input signal may be fixed by various methods based on gating and storage in capacitors. All these methods require rapid switching elements such as transistors and vacuum tubes. However, these switches are not applicable in wide

Card 1/2

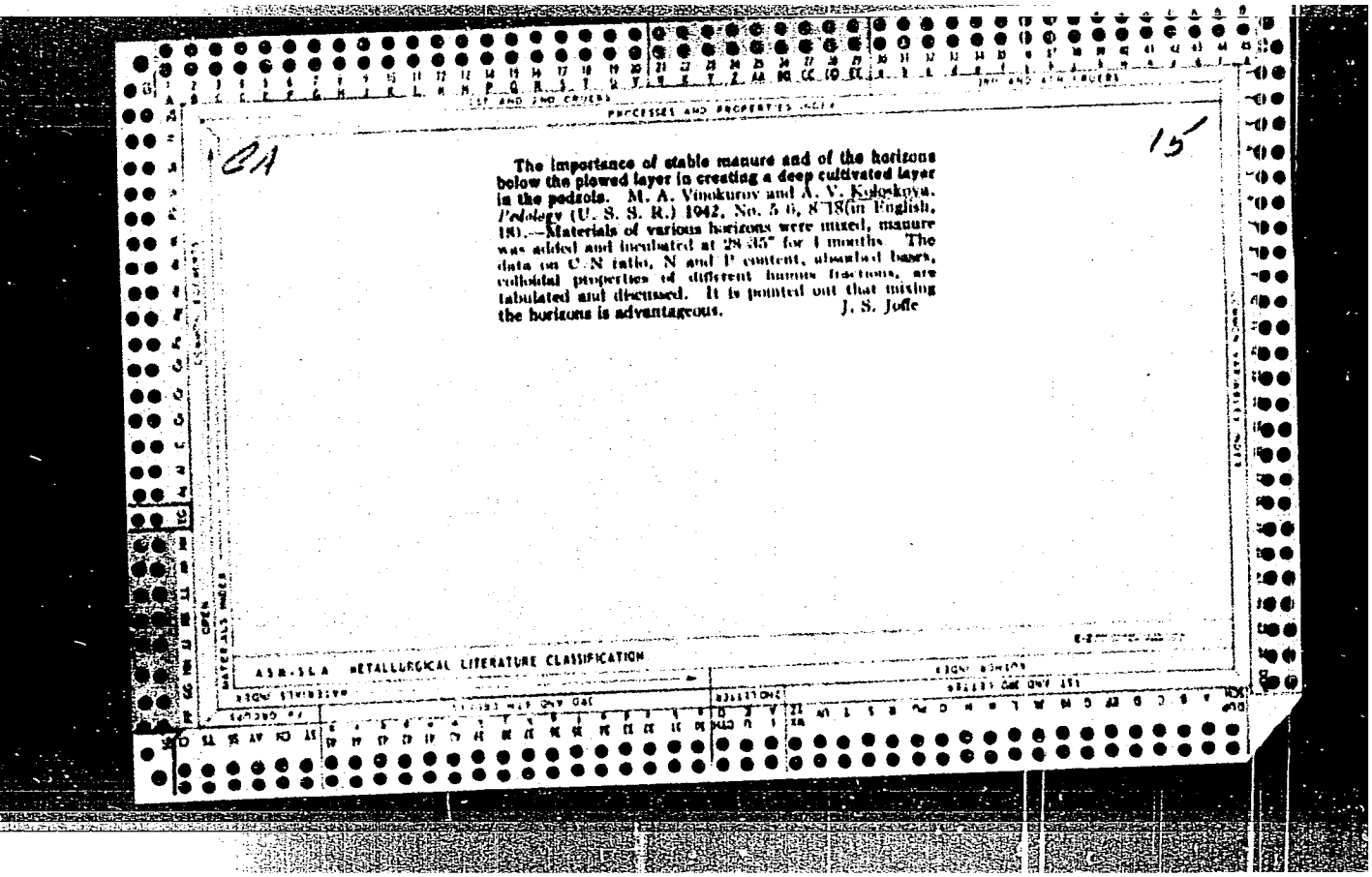
2

KOLOSKOVA, A.A.

GRITSHAN, N.N. (Moscow); KOLOSKOVA, A.A. (Moscow).

Data on a study of toxoplasmosis in man. Arkh.pat. 16 no.1:74-80 Ja-Mr '54. (MLRA 7:5)

1. Iz kafedry patologicheskoy anatomii (zaveduyushchiy - akademik A.I. Abrikosov) I Moskovskogo ordena Lenina meditsinskogo instituta i kliniki detskikh bolezney (zaveduyushchiy - chlen-korrespondent Akademii meditsinskikh nauk SSSR professor Yu.F.Dombrovskaya) I Moskovskogo ordena Lenina meditsinskogo instituta.
(Toxoplasmosis)



C11

15

The importance of stable manure and of the horizons below the plowed layer in creating a deep cultivated layer in the podzols. M. A. Vinokurov and A. V. Kolotkova. *Pedology* (U. S. S. R.) 1942, No. 5-6, 8-18(in English, 18).—Materials of various horizons were mixed, manure was added and incubated at 28-35° for 4 months. The data on C:N ratio, N and P content, absorbed bases, colloidal properties of different humus fractions, are tabulated and discussed. It is pointed out that mixing the horizons is advantageous. J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KOLOSKOVA, A. V.

Effect of deep subsoiling on seasonal dynamics of some fertility elements in gray, slightly podzolic soils. Uch.zap.Kaz.un. 113 no.1:11-23 '53. (MLA 10:3)
(Tatar A.S.S.R.--Podzol) (Tillage) (Soil fertility)

KOLOSKOVA, A.V.

Effect of forest shelterbelts on certain physical properties of gray slightly podzolic soils and on the dynamics of these properties. Uch.zap.Kaz.un. 114 no.1:79-92 '54. (MLRA 10:3)

1. Kafedra pochvovedeniya.
(Tatar A.S.S.R.--Windbreaks, shelterbelts, etc)
(Forest influences) (Soil physics)

KOLOSKOVA A.V.

USSR/Soil Science. Physical and Chemical Properties of Soils. I-3

Abs Jour: Referat Zh-Biol., No 6, 25 March, 1957, 22445

Author : Koloskova A.V.
Inst :
Title : Changes in Some Properties of Ordinary Chernozems Effected by Field-Protecting Forest Strips.

Orig Pub: Uch. zap. Kazansk. un-ta, 1956, 116, No 1, 236-239.

Abstract: The comparative examination of soils protected by a 15 year old field-rotecting strip and interstrip portions in the Chistopol Rayon of Tatar ASSR, clarified the following particulars. A significant increase of humus (up to 8.94% as against 6.66%) for a distance of 100 m was observed in soils protected by the strip and at its edges. There was also a change in content of absorbed bases from 45.52 mg per 100 g of soil in the strip to 36.69 mg on fields. The pH of the strip is 6.32, and of the fields 7.11. In the soil under the strip, the quantity of water-resistant aggre-

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-2-

Chair of Soil Science

USSR/Soil Science. Physical and Chemical Properties of Soils. I-3

Abs Jour: Referat Zh-Biol., No 6, 25 March, 1957, 22445

gates (>0.25 mm) comprises 65.32%; at the edges it diminishes to 52.74%, and in the interstrip portions, to 40%. Analogous changes were observed also for fractions >1 mm. Starting at a depth of 10-20 cm, the quantity of water-resistant aggregates in the soil under the protective strip is lowered; on fields, it either increases slightly or remains unchanged, and from a depth of 20 to 55-65 cm, noticeably increases by 12-20%. The erosion of the silt fraction from upper soil layers under the strip is not observed; a drop in carbonates and an increase of humus solubility occurs. Due to tree planting, no process of degradation takes place, although some changes in the chemical composition of ordinary chernozem are observed.

Card : 2/2

-3-

KOLOSKOVA, A.V.

Work of the Kazar Branch of the All-Union Society of Soil Scientists in 1957. Pochvovedenie no.11:101 N '58. (MIRA 11:12)

(Tatar A.S.S.R.--Soil research)

KOLOSKOVA, A.V.; AKBERDINA, R.Kh.

Qualitative composition of soil aggregates of the Volga-Kama forest-steppe. Pochvovedenie no.10:100-104 O '59.
(MIRA 13:2)

1. Kazanskiy gosudarstvennyy universitet.
(Volga Valley--Soils) (Kama Valley--Soils)

KOLOSKOVA, A.V.

Structure of soil aggregates in leached Chernozems of the Tatar A.S.S.R. Nauch. dokl. vys. shkoly; biol. nauki no.1:193-197 '60. (MIRA 13:2)

1.Rekomendovana kafedroy pochvovedeniya Kazanskogo gosudarstvennogo universiteta im. V.I. Ul'yanova-Lenina.
(Chistopol' District--Soil structure)

KOLOSKOVA, A.V.; SHCHUKINA, G.N.

Physicochemical properties of water-stable aggregates of various size. Nauch. dokl. vys. shkoly; biol. nauki no. 1:198-202 '61.
(MIRA 14:2)

1. Rekomendovana kafedroy pochvovedeniya Kazanskogo gosudarstvennogo universiteta im. V.I. Ul'yanova-Lenina.
(SOIL PARTICLES)

KOLOSKOVA, A.V.

Department of Soil Science. Uch.zap.Kaz.un. 120 no.3:33-55 '60.
(MIRA 14:6)

(Tatar A.S.S.R.--Soil research)

KOLOSKOVA, A.V.

Agro physical properties of leached Chernozems of the Tatar A.S.S.R. Pochvovedenie no.8:63-73 Ag '61. (MIRA 14:11)

1. Kazanskiy ordena Trudovogo Krasnogo Znameni gosudarstvennyy universitet imeni Ul'yanova-Lenina.
(Tatar A.S.S.R.--Chernozem soils)

SIGAL, A.Ye., kand.med.nauk; KOLOSKOVA, L.A., red.; AGZAMOV, K., tekhn.red.

[Pulmonary suppurations; their clinical aspects, the outcomes of the disease, and work prognosis] Legochnye nagnoeniia; klinika, iskhody zabolevaniia i trudovoi prognoz. Tashkent, Gos.med.izd-vo M-va zdravookhraneniia UzSSR, 1960. 127 p. (MIRA 15:5)

(LUNGS--DISEASES) (DISABILITY EVALUATION)

MIRGANIYEV, Sh.M.; KOLOSKOVA, L.A., red.; AGZAMOV, K., tekhn.red.

[Clinical X-ray diagnosis of neoplastic diseases of the mediastinum] Kliniko-rentgenologicheskoe raspoznavanie opukholevykh zabolevanii sredosteniia. Tashkent, Gos.med. izd-vo M-va zdravookhraneniia UzSSR, 1961. 136 p.
(MIRA 15:5)

(MEDIASTINUM—TUMORS)

FEDOTOVA, Z.G., red.; KOLOSKOVA, L.A., red.; TSAY, A., tekhn. red.

[Problems of hygiene in designing dwellings for hot climatic conditions] Gigienicheskie voprosy proektirovaniia zhilishch v usloviiakh zharkogo klimata. Tashkent, Medgiz, UzSSR, 1961. 123 p. (MIRA 15:7)

(Soviet Central Asia—Dwellings)

LERNER, P.M.; FEDOTOVA, Z.G., red.; KOLOSKOVA, L.A., red.; TSAY, A., tekhn. red.

[Problems of hygiene in designing dwellings for hot climatic conditions] Gigienicheskie voprosy proektirovaniia zhilishch v usloviiakh zharkogo klimata. Tashkent, Medgiz, UzSSR, 1961. 123 p. (MIRA 15:7)

(SOVIET CENTRAL ASIA—DWELLINGS)

YUSUPOV, K.Yu.; KOLOSKOVA, L.A., red.; SUKHANOV, P.P., tekhn. red.

[New potable preparation for those working under high temperatures; some problems of water-salt metabolism] Novoe pit'evoe sredstvo dlia rabochikh v usloviiakh vysokikh temperatur; nekotorye voprosy vodno-solevogo obmena. Tashkent, Medgiz UzSSR, 1961. 185 p. (MIRA 15:7)

(Water metabolism) (Industrial hygiene)

KRUPSKIY, I.N.; DOLGOPOLOV, D.G.; MANZHELIY, V.G.; KOLOSKOVA, L.A.

Determining the heat conductivity of paraffin at low temperatures. Inzh.-fiz. zhur. 8 no.1:11-15 Ja '65. (MIRA 18:3)

1. Fiziko-tekhnicheskiy institut nizkikh temperatur AN UkrSSR, Khar'kov.

SHVETS, M.Ye.; SHNEYEROV, B.Ye.; KOLOSKOVA, L.F.

Use of radiation measurements from satellites in a model of large-scale atmospheric movements. Trudy GGO no.166:173-181 '64. (MIRA 17:11)

KOLOSKOVA, M.I.

Using a mercury poremeter in studying the structure of reservoir rocks. Trudy VNIIGAZ no.20(28):65-71 '64.

Comparative data in the determination of porosity by various methods. Ibid.:72-82 (MIRA 17:8)

L 18469-63 EPF(c)/EWP(j)/EWT(m)/BDS AFFTC/ASD Pr-4/Pc-4 RM/MLK(a)/
MAY/WW

ACCESSION NR: AP3007458 S/0286/63/000/009/0051/0051

AUTHOR: Dorokhina, T. V.; Novikov, A. S.; Nudel'man, Z. N.; Kaplun, M. G.; Geydy*sh, L. S.; Koloskova, M. V.

TITLE: Method for vulcanizing rubber mixes. Class 39, No. 154387

SOURCE: Byul. izobret. i tovarn. znakov, no. 9, 1963, 51

TOPIC TAGS: rubber, rubber mix, carboxylic rubber mix, carboxylic rubber mix vulcanization, vulcanization, scorching, prevulcanization, vulcanizing agent, polyorganoaluminosiloxanes

ABSTRACT: An Author Certificate has been issued for a method of vulcanizing rubber mixes based on carboxylic rubbers. Prevulcanization is prevented through the use of polyorganoaluminosiloxanes as vulcanizing agents.

ASSOCIATION: none

Card 1/2

NOVIKOV, A.S.; KOLOSKOVA, M.V.

Use of natural mineral fillers in the rubber industry. Trudy IGEM no.95:79-87 '63. (MIRA 16:12)

S/058/61/000/010/038/100
A001/A101

24,7400

AUTHORS: Koloskova, N.G., Kopvillem, U. Kh.

TITLE: Even-order moments of the paramagnetic resonance line at strong-magnetic dilution of a crystalline specimen

PERIODICAL: Referativnyy zhurnal, Fizika, no.10, 1961, 160, abstract 10V330 (V sb. "Paramagnitn. rezonans", Kazan', Kazansk. un-t, 1960, 86-89)

TEXT: The authors derive theoretically a formula for calculating, at small concentrations C of magnetic ions in dielectrical crystals, even-order moments in the curve of paramagnetic resonance absorption of magnetic particles with effective spin equal to $\frac{1}{2}$. The formula contains elements of a tensor describing any two-particle spin-spin interactions between magnetic equivalent particles, depending on first powers of spin operators. At an isotropic g-factor, taking into account only magnetic dipole-dipole interactions, the formula coincides with the known result of C. Kittel and E. Abrahams ("Phys. Rev", 1953, v. 91, 894). As an example, 2nd and 4th moments of electronic paramagnetic resonance lines are calculated for rare-earth ions in dinitrates and ethyl sulfates. The authors investigate distribution of spin-spin relaxation times in

Card 1/2

Even-order moments ...

S/058/61/000/010/038/100
A001/A101

clusters of magnetic ions formed during magnetic dilution of a crystal. It is established that in substances under consideration the shape of the electronic paramagnetic resonance curve at C = 1 is almost rectangular. At C→0 the curve is narrowing down in the center and the wings fall off according to the law $C\nu^{-1}$, where ν is frequency distance from the curve center.

U. Kopvillem

[Abstracter's note: Complete translation]

Card 2/2

KOLOSKOVA, N.G.

82530

S/181/60/002/007/008/042
B006/B070

24.7900

AUTHORS: Koloskova, N. G., Kopvillem, U. Kh.

TITLE: Effect of the Inner Electric Field in Non-conducting Paramagnetic Single Crystals on Two-particle Spin-Spin Interaction

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 7, pp. 1368-1378

TEXT: The purpose of the present work is to calculate the second and fourth moments of the distribution curve of the off-diagonal elements of the spin-spin interaction operator. The calculation is made by taking into consideration the coefficients of the spin Hamiltonian of the dipole - dipole and the anisotropic exchange interactions between the ions with an anisotropic g-factor and the effective electron spin 1/2. The results of the theoretical investigation are applied to a study of the shape of the paramagnetic resonance line and of the free magnetic induction. The relaxation process in a spin system is examined on the basis of Bloch's theory, and the order of magnitude of the paramagnetic

Card 1/3

82530

Effect of the Inner Electric Field in Non-conducting Paramagnetic Single Crystals on Two-particle Spin-Spin Interaction

S/181/60/002/007/002/042
B006/B070

spin-spin relaxation time is estimated. Numerical data for a number of trebly positive ions in ethyl sulfates and of dinitrates of rare-earth ions are given (the factors $g_\perp$ and $g_\parallel$; the length of the sides of a hexagonal unit cell a(x); the moments $\langle(\Delta\nu)^2\rangle$ and $\langle(\Delta\nu)^4\rangle$ in sec^{-2} and sec^{-4}, respectively; v and m). The results of the experiment are collectively discussed: 1) The distortion of the orbital motion of the unpaired electrons of paramagnetic ions, brought about by the field E, influences the shape of the curve $f(\nu)$, as well as, the character of the two-particle interaction in paramagnetic single crystals. 2) Exchange interactions between ions with anisotropic g-factor affect both the second- and fourth-order moments. 3) The spin-spin relaxation time is not isotropic. 4) The curve $f(\nu)$ is Gaussian when (a) a particular distribution of magnetic ions in the crystal lattice is given and (b) when the field E is of such a type that a = -c/b. 5) The shape of the curve $f(\nu)$ due to dipole-dipole interactions depends mainly on the type of crystal lattice and the ratio of the g-factors. There are 2 figures, 2 tables, and 16 references: 6 Soviet, 8 US, 1 British, and 1 Japanese.

Card 2/3

82530

Effect of the Inner Electric Field in Non-conducting Paramagnetic Single Crystals on Two-particle Spin-Spin Interaction

S/181/60/002/007/002/042
B006/B070

ASSOCIATION: Kazanskiy gosudarstvennyy universitet imeni V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

SUBMITTED: March 4, 1959

Card 3/3

82342
S/139/60/000/03/039/045
E032/E314

24.7900

AUTHORS: Koloskova, N.G. and Kopvillem, U.Kh.

TITLE: The Width of the Magnetic Resonance Line in Diluted Paramagnetic Monocrystals with an Anisotropic g-factor

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, No 3, pp 223 - 229 (USSR)

ABSTRACT: Kittel and Abrahams and also Glebashev (Ref 1) have obtained formulae for the second and fourth reduced moments $\langle(\Delta\nu)^2\rangle$ and $\langle(\Delta\nu)^4\rangle$ of the paramagnetic resonance curve $f(\nu)$ in non-conducting magnetically diluted monocrystals. However, these authors did not take into account the effect of the internal electric field E on the interactions H_1 between magnetic ions in the crystal. As a result, the formulae obtained in Ref 1 cannot be used in the analysis of experimental curves for $f(\nu)$ and the calculation of the constants characterising the internal interaction in paramagnetics. The present paper is concerned with a spin system consisting of cN magnetically equivalent paramagnetic ions with an effective spin S = 1/2 and

Card1/3

82342
S/139/60/000/03/039/045
E032/E314

The Width of the Magnetic Resonance Line in Diluted Paramagnetic Monocrystals with an Anisotropic g-factor

an anisotropic g-factor. The effect of the internal field E on the interaction H_1 is reduced to the derivation of the functional dependence between f(ν), $\langle(\Delta\nu)^2\rangle$ and $\langle(\Delta\nu)^4\rangle$ on the one hand, and the elements of the g-tensor and the coefficients of the eigenfunctions $|\pm\rangle$ of the paramagnetic ion, on the other. Such a functional dependence can be used to predict the half-width $\Delta\nu_{1/2}$ of paramagnetic resonance lines, to calculate the exchange integrals I^{ik} between magnetic ions i and k and to use the extensive experimental material accumulated by the paramagnetic resonance methods in the study of internal interactions H_1 in paramagnetics. All the internal interactions in paramagnetics which can be written down in the form of a tensor operator depending on the spin variables of two paramagnetic ions, are taken into account. The tensor

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83753

S/056/60/038/004/046/048
B006/B056

24.1800

AUTHORS: Koloskova, N. G., Kopvillem, U. Kh.

TITLE: The Shape of the Lines of Nuclear Acoustic Resonance

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1351 - 1353

TEXT: Within the framework of the quantum theory of irreversible processes, the authors investigated the character of the interaction between an ultrasonic field and a nuclear spin system in a cubic crystal, and showed that the experimental data on acoustic magnetic resonance (acoustic resonance absorption, relaxation processes in acoustically excited spin systems) cannot be satisfactorily described by means of the theory of nuclear magnetic resonance (Refs. 1,2). For the shape $A(\omega)$ of acoustic resonance absorption lines, a formula (1) is given, which holds for the case in which a longitudinal sound wave penetrates the crystal in the [110] direction, and a strong static magnetic field $\vec{H} \parallel z$ forms the angle θ together with the [110] axis. According to this formula, the absorption curve $A(\omega)$ consists of a number of Gaussian lines which are

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The Shape of the Lines of Nuclear Acoustic Resonance

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shifted by $\Sigma_\gamma \Delta^2_{a\gamma}/\omega_\gamma$ from the resonance frequency ω_a. The half-width of these lines is calculated from the formula $\Delta\nu_{1/2} = 2.35\,\Delta_{ao}$. As the coefficients $\Delta^2_{\xi o}$ depend on the exchange interactions, acoustic magnetic resonance seems to be a useful method of investigating exchange interactions in crystals. If $\Delta\nu_{1/2}$ depends on dislocation-type effects, one finds that with $I = 3/2$ and $I = 5/2$, the ratio δ of the widths of ultrasonic resonance and magnetic resonance is $\delta(3/2) = \sqrt{5/3}$ and $\delta(5/3) = \sqrt{12/5}$, respectively. Experimentally, $\delta(3/2) = 1.7$ and $\delta(5/2) > \delta(3/2)$ were found. The authors thank S. A. Al'tshuler for discussing the results obtained. There are 6 references: 1 Soviet, 4 US, and 1 Japanese.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet (Kazan' State University)

SUBMITTED: February 8, 1960

Card 2/2

86867
S/141/60/003/005/022/026
E192/E382

6.8000 (3201, 1099, 1162, 1144)

AUTHORS: Koloskova, N.G. and Kopvillem, U.Kh

TITLE: The Possibility of Exciting Free Nuclear Induction by an Ultrasonic Pulse

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol. 3, No. 5, pp. 904 - 905

TEXT: The possibility of using an ultrasonic pulse for exciting the spin system of a paramagnetic material is investigated. It is assumed that a longitudinal sound wave propagates along the crystal axis (110) of a cylindrical sample of a crystal with a cubic lattice. The sample contains N identical magnetic nuclei having an electric quadrupole moment Q. The directions z and y are determined by the spherical coordinates Θ, φ and $3\pi/2 + \Theta$ φ where (110) is the polar axis and φ is the azimuthal angle measured from (001). It is assumed that the times of the transverse and longitudinal magnetic relaxation (T_2 and T_1) and the transient time of the

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standing sound waves in the crystal (t_v) fulfil the condition T_1, $T_2 \gg t_v$ and $\Delta t \gg 2\pi/\omega_o$, where $\omega_o = \gamma H_o$ is the Larmor precession of the spins s in a strong static magnetic field H_o and γ is the gyromagnetic ratio. The equations of motion for the macroscopic components of magnetisation along the axes x, y, z under the influence of an ultrasonic pulse having a duration Δt and carrier frequency $n\omega_o$ for $s = 3/2$ are as follows:

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$$\langle \mu \rangle_1 = \frac{\sqrt{3} N \gamma \hbar \zeta}{4} \left\{ \zeta \sin\left(2\sqrt{3}\,\omega_1 \Delta t\right) \left[x \cos\left(\omega_0 t\right) - y \sin\left(\omega_0 t\right) \right] + \right.$$
$$\left. + \frac{1}{\sqrt{3}} \left[\cos\left(2\sqrt{3}\,\omega_1 \Delta t\right) + 4 \right] z \right\} \qquad (\zeta = \gamma \hbar H_0 / kT); \tag{1}$$

$$\langle \mu \rangle_2 = N \gamma \hbar \zeta \left[\cos\left(2\sqrt{3}\,\omega_2 \Delta t\right) + 1 \right] z;$$
$$\omega_1 = \left[-16 s (2s-1) \hbar \right]^{-1} 9 e Q (1-\gamma_\infty) C_{11} \sin(2\theta) E_{01};$$
$$\omega_2 = \left[-8 s (2s-1) \hbar \right]^{-1} e Q (1-\gamma_\infty) \left[\frac{3}{4} + \frac{C_{44}}{C_{11}} \right] C_{11} E_{02}; \tag{2}$$
$$E_{0n} \sim \frac{n \omega_n d_n}{v}; \quad W_n = \frac{1}{2} v \omega^2 E_{0n}^2.$$

In [illegible] equations W_n is the power of the sonic wave per cm^2, [illegible] is the density of the crystal, v is the velocity of propagation of the longitudinal sonic wave,

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A_o is the displacement of the base of the cylinder, C_{11} and C_4 are the elements of the tensor relating the gradient of the electric field in the nuclei to the deformation tensor, γ_∞ is the anti-screening constant and $\underline{x}$, $\underline{y}$, $\underline{z}$ are unit vectors. It is seen that the x- and y-components of the macroscopic vector $\underline{\mu}$ will oscillate at a frequency ω when the ultrasonic generator is switched off. The calculations for the nuclei Br^{79} in the crystal of KBr showed that the strength of the signal determined by Eq. (1) was equal to the strength of the normal signal of the nuclear inductance at room temperature if $T \sim 1.4\ ^{\circ}K$ and $H \sim 10^4$ gauss. The ultrasonic pulse

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excites also the oscillations of the nonequilibrium components of the electrical quadrupole moment of the spin system.

The authors express their gratitude to S.A. Al'tshuler, R.A. Dautov and B.I. Kochelayev for valuable discussion.

There are 4 references: 3 English and 1 Soviet.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet (Kazan' State University)

SUBMITTED: May 23, 1960

Card 5/5

S/126/60/010/006/003/022
E201/E491

24,7900(1035, 1144, 1160)

AUTHORS: Koloskova, N.G. and Kopvillem, U.Kh.

TITLE: Acoustic Excitation of Free Nuclear Induction in Cubic Crystals

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.6, pp.818-824

TEXT: Acoustic magnetic resonance was discussed first theoretically by Al'tshuler (Ref.1). Later it was found experimentally in magnetic nuclei and electron shells of atoms (Ref.2). The acoustic method is now widely used to study the spin-lattice interactions H_{cp}. The present authors show that the existing ultrasonic pulse method (Ref.3) can be used to measure the interaction H_{cp} independently of the value of the form-factor $g(\nu)$. This is done by recording the intensity I of a nuclear induction signal produced by sound pulses. The form of the signal gives information on the nature of non-equilibrium components of the magnetic and quadrupole moments of the spin system. The authors' calculations deal with the specific case of cubic crystals containing identical magnetic nuclei possessing electric quadrupole moments. The intensity and form of the signal are

S/126/60/010/006/003/022
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Acoustic Excitation of Free Nuclear Induction in Cubic Crystals

calculated. It is shown that an acoustic pulse causes oscillations of the non-equilibrium macroscopic components of the electric quadrupole moment tensor of the spin system.
Acknowledgments are made to S.A.Al'tshuler, R.A.Dautov and B.I.Kochelayev for their advice. The paper is entirely theoretical. There are 13 references: 4 Soviet and 9 non-Soviet (one of which is translated into Russian).

ASSOCIATION: Kazanskiy gosudarstvennyy universitet
(Kazan State University)

SUBMITTED: May 16, 1960

Card 2/2

32217
S/139/61/000/004/007/023
E032/E314

24,7000 (1136, 1144, 1385)

AUTHORS: Koloskova, N.G. and Kopvillem, U.Kh.

TITLE: Ultrasonic nuclear induction in dielectric crystals

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, no. 4, 1961, 48 - 51

TEXT: The spin-echo method is being widely used in the study of paramagnetic spin systems (Ref. 1: I.J. Lowe, R.E. Norberg. Phys. Rev., 107, 46, 1957). The aim of the present paper is to investigate the possible application of various pulse generators to the excitation of paramagnetic spin systems in crystals, e.g. light sources, ultrasonic generators, cold neutrons, variable magnetic fields and so on. If the operator H_2, which represents the contribution of the pulse generator to the Hamiltonian of the spin system does not commute with the magnetic and electric quadrupole moment operators of the spin system (μ and Q) and, moreover, the generator produces sufficient power and the duration of the pulse is much smaller than the relaxation times T_k of the non-equilibrium components μ and Q,

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Ultrasonic nuclear induction ....

then the pulse method may be used to measure the dynamic characteristics of the spin system, i.e. the times T_k and the magnitudes of the matrix elements $\langle k|H_2|\ell\rangle$ (the constant of interaction between the magnetic particles of the pulse generator). The authors discuss the case where the "instrument" is a spin system with an axial symmetry, while the "scale of the instrument" gives Δt and the average value $\langle \mu_z(\Delta t)\rangle$ of the z-component of the magnetic moment of the spin system. It is shown that in the case of ultrasonic excitation these data can be used to determine the matrix element of the nuclear spin-lattice interaction operator in crystals. A quantum theory of the indications of the "instrument" is developed for the case where the generator interacts with each magnetic particle separately. The paper is concluded with a discussion of the possible detection of free nuclear precession in cubic crystals excited by an ultrasonic pulse.

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24,7000

36480
S/181/62/004/003/021/045
B125/B108

AUTHORS: Koloskova, N. G., and Kopvillem, U. Kh.

TITLE: Theory of the shape of the nuclear acoustic resonance line in cubic crystals

PERIODICAL: Fizika tverdogo tela, v. 4, no. 3, 1962, 697-699

TEXT: The form $A(\omega)$ of the magneto-acoustic resonance line in cubic crystals (the Hamiltonian of which is $\mathcal{H} = \mathcal{H}_0 + \mathcal{H}_1$, $\mathcal{H}_1 = \mathcal{H}_{11} + \mathcal{H}_{12}$) has been studied in the quantum-mechanical theory of irreversible processes. Here, $\mathcal{H}_0$ is the operator of the Zeeman nuclear energy, $\mathcal{H}_{11}$ the operator of two-particle spin-spin interactions; $\mathcal{H}_{12}$ the operator of the quadrupole nuclear energy caused by dislocations in the crystal. The longitudinal sound wave is assumed to propagate along the (110) axis. For transitions with $\Delta m = \pm 2$, Z was assumed to be perpendicular to the (110) axis. If the contribution of the satellite lines is neglected, then

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$$A(\omega) = \sum_a \omega^2 \frac{W_a}{VkT}\left(1 - \sum_{\omega_\gamma \neq 0} \frac{\Delta_{a\gamma}^2}{a\omega_\gamma^2}\right) \frac{1}{\sqrt{2\pi\Delta_{a0}^2}} \exp\left\{-\frac{1}{2\Delta_{a0}^2}\left(\omega - \omega_a + \sum_\gamma \frac{\Delta_{a\gamma}^2}{\omega_\gamma}\right)^2\right\} \quad (2).$$

V - sample volume; ω - ultrasonic frequency; w - transition probability due to ultrasound; ω_γ - characteristic frequency of the perturbation $\mathcal{H}_1$ which causes the transitions with change in energy of the unperturbed system by $\hbar\gamma\omega_0$ ($\gamma = 0,1,2$; ω_0 - Larmor frequency); $\Delta^2_{a\gamma}$ - reduced second moments for the perturbation $\mathcal{H}_1$. The indices a = 1 and a = 2, respectively, correspond to transitions with $\Delta m = \pm 1$ and $\Delta m = \pm 2$. The two Gaussian lines of acoustic nuclear resonance are displaced from the resonance frequencies ω_0 and $2\omega_0$ by respectively $\sum_\gamma(\Delta^2_{1\gamma}/\omega_\gamma)$ and $\sum_\gamma(\Delta^2_{2\gamma}/\omega_\gamma)$, and have the half width $(\Delta\nu_{1/2})_a = 2.35(\Delta^2_{a0})^{1/2}$. The lines $A(\omega)$ are wider than the lines $f(\omega)$ of magnetic resonance. Owing to the contribution of the isotropic exchange interaction to Δ^2_{a0}, the magneto-acoustic resonance is a promising method of studying the exchange

Theory of the form of the nuclear ... S/181/62/004/003/021/045
B125/B108

interaction in crystals. S. A. Al'tshuler is thanked for discussions. There are 10 references:3 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: W. G. Proctor, W. H. Cantilla, Phys. Rev., 101, 1757, 1956. M. Menes, D. I. Bolef, Phys. Rev., 109, 218, 1958; R. Loudon. Phys. Rev., 119, 919, 1960; E. Otsuka, J. Phys. Soc. Japan, 13, 1155, 1958; E. F. Taylor, N. Bloembergen, Phys. Rev., 113, 431, 1959.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet (Kazan' State University)

SUBMITTED: November 9, 1961

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KOLOSKOVA, N.G.; KOPVILLEM, U.Kh.

Theory of the shape of the nuclear acoustic resonance line in cubic crystals. Fiz. tver. tela 4 no.3:697-699 '62. (MIRA 15:4)

1. Kazanskiy gosudarstvennyy universitet.
(Crystals--Spectra)
(Nuclear magnetic resonance and relaxation)

S/181/62/004/011/014/049
B104/B102

AUTHOR: Kolonkova, N. G.

TITLE: The effect of dislocations on the shape of paramagnetic resonance lines

PERIODICAL: Fizika tverdogo tela, v. 4, no. 11, 1962, 3129 - 3135

TEXT: Using the method of absorption-curve moments, formulas are obtained for the line width of electron paramagnetic resonance, nuclear magnetic resonance and nuclear acoustic resonance on electronic and nuclear paramagnetics, both for equidistant and for nonequidistant energy levels:

$$\nu_{1/2} = 1.32 f(S) G b \sqrt{c} \left\{ C_{n,1}^2 + C_{n,2}^2 + \frac{1}{8(1-\nu)^2} \times \right.$$
$$\left. \times \left[(C_{n,1} + C_{n,2})^2 + 4C_{n,1}^2 + 4C_{n,2}^2 \right] \right\}^{1/2}, \quad (9).$$

Here $f(S) = \left\{ \frac{1}{5} \left[4S(S+1) - 3 \right] \right\}^{1/2}$ (magnetic resonance);

$f(S) = \left\{ \frac{1}{7} \left[12S(S+1) - 17 \right] \right\}^{1/2}$ (acoustic resonance), $\Delta m = 1$);

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The effect of dislocations on the...

$f(S) = \left\{\frac{16}{7}\left[S(S+1) - 2\right]\right\}^{1/2}$ (acoustic resonance, $\Delta m = 2$); $f = m_1^2 - m_2^2$ (resonance on nonequidistant levels with quantum numbers m_1 and m_2); $f = \frac{2}{3}H$ for $S = \frac{1}{2}$. The second and the fourth moments of the absorption curves are taken into account in these formulas under the assumption that the lattice distortions are screw dislocations (subscript B) and linear dislocations (subscript r). The C_{B1}, C_{B2}, C_{r1}, C_{r2}, and C_{r3} are the components of a rank-4 tensor that characterizes the interaction of the spin with the lattice stresses. In discussing the data that the line width is shown to be proportional to $\sqrt{c}$ where c is the concentration of the dislocations; the line width also depends on the mutual orientation of the external magnetic field, the crystallographic axes and the lines of dislocations. The absorption curve is strongly asymmetric for $S = \frac{1}{2}$. There is satisfactory agreement with experiments (S. Aisenberg, H. Statz, G. F. Koster. Phys. Rev., 116, 811, 1959; W. G. Proctor, W. A. Robinson. Phys. Rev., 104, 1344, 1956; E. F. Taylor, N. Bloembergen. Phys. Rev. 113, 431, 1959; E. Otsuka, Y. Oshio, T. Kobayashi, H. Kawamura. J. Phys. Soc. Japan, 14, 1454, 1959). There is 1 table.

Card 2/3

S/181/63/005/001/009/064
B102/B186

AUTHOR: Koloskova, N. G.

TITLE: The effect of uniform deformations on the paramagnetic resonance spectrum

PERIODICAL: Fizika tverdogo tela, v. 5, no. 1, 1963, 61-65

TEXT: Determining the spin-phonon interaction based on the broadening and the shift of the paramagnetic resonance lines leads merely to an estimate of the order of magnitude unless line shape and the symmetry prevailing at the paramagnetic center are taken into account. Hitherto this has been done only for cubic symmetry. The present paper deals with other symmetries of more common occurrence. The expression considered is the spin Hamiltonian of the spin-phonon interaction (i.e. of the interaction of the spin $S > 1/2$ of the paramagnetic particle with the deformation field) in first approximation with respect to the components $e_{\gamma\delta}$ of the deformation tensor, and reads

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The effect of uniform ...

$$\mathcal{H}^{(1)}_{c\phi.} = \frac{1}{2}(S_\alpha S_\beta + S_\beta S_\alpha) G_{\alpha\beta\gamma\delta} e_{\gamma\delta}, \qquad \alpha, \beta, \gamma, \delta = x, y, z$$

$$e_{\gamma\delta} = \frac{1}{2}\left(\frac{\partial u_\gamma}{\partial \delta} + \frac{\partial u_\delta}{\partial \gamma}\right),$$

S_α is the projection of the spin onto the α axis, G is a 4th rank tensor characterizing the spin-phonon interaction, and $\vec{u}$ is the displacement vector. If S = 1/2, the expression reduces to $\mathcal{H}^{(1)}_{c\phi} = S_\alpha H_\beta G'_{\alpha\beta\gamma\delta} e_{\gamma\delta}$. $\mathcal{H}^{(1)}_{c\phi}$ is given for rhombic, trigonal and tetragonal symmetries. For the last of these

$$\mathcal{H}^{(1)}_{c\phi.} = \frac{3}{2}\left[S_z^2 - \frac{1}{3}S(S+1)\right](G_{33} \cdot e_{zz} + 2G_{36}(e_{xz} + e_{yy})) +$$

$$+ (S_x^2 - S_y^2)\,2(G_{11} + G_{12})(e_{xx} - e_{yy}) + (S_x S_y + S_y S_x)\,4(G_{12} - G_{11})\,e_{xy} +$$

$$+ (S_x S_z + S_z S_x) \cdot 4G_{51} e_{xz} + (S_y S_z + S_z S_y) \cdot 4G_{51} e_{yz}.$$

If two-phonon processes are to be taken into account, the calculations must be made in second approximation with respect to $e_{\gamma\delta}$ and this results in highly complex formulas for $\mathcal{H}^{(2)}_{c\phi}$. In the relatively simple cases of hydrostatic pressure p and C_{3v} symmetry,

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The effect of uniform ...

$$\mathcal{H}_{\text{сф.}}^{(2)} = D^{(2)}\left[S_z^2 - \frac{1}{3}S(S+1)\right],$$

$$D^{(2)} = \frac{3}{2}p^2 \cdot \{(s_{11}+s_{12}+s_{13})^2 (G_{333}+16G_{366}) +$$

$$+ 8(s_{11}+s_{12}+s_{13})(s_{23}+2s_{13})G_{366}\}.$$

while for axial pressure u in the direction Oz and cubic symmetry,

$$\mathcal{H}_{\text{сф.}}^{(2)} = \frac{3}{2}\left[S_z^2 - \frac{1}{3}S(S+1)\right] \cdot \{G_{111}(s_{11}^2 - s_{12}^2) +$$

$$+ 2G_{112}(s_{11} \cdot 2s_{12} - s_{12}^2)\} \cdot u^2.$$

Finally, the effect of uniform deformation on paramagnetic resonance line width and shift is studied. Assuming small deformations, the following approximate relations are obtained:

$$h^2\langle\Delta\nu^2\rangle = h^2\langle\Delta\nu^2\rangle_0 + \frac{1}{5}[4S(S+1)-3] \cdot Q_0^2, \qquad (1)$$

$$Q_0 = \frac{3}{2}G_{\alpha\alpha\beta\beta}e_{\gamma\delta},$$

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for the reduced second moment, where z^* is the direction of the magnetic field applied, $\langle \Delta\nu^2 \rangle_0$ is the second moment of the curve in the case of zero deformation. If the change in line shape due to deformation is small, it can be estimated from $\nu_{1/2} = 2.35(1+\varepsilon)\sqrt{\langle \Delta\nu^2 \rangle}$, $\varepsilon = -0.58(\lambda - 1)$ where $\lambda = \langle \Delta\nu^4 \rangle / 3(\langle \Delta\nu^2 \rangle)^2$.

$$g\beta(H - H_0) = \frac{1}{g\beta H_0} \cdot \frac{4S(S+1)-3}{2} \cdot \left\{ Q_1^2 + Q_{-1}^2 - \frac{1}{2}(Q_2^2 + Q_{-2}^2) \right\},$$

$$Q_1 = G_{x^*z^*\gamma\delta} e_{\gamma\delta}, \quad Q_2 = (G_{x^*z^*\gamma\delta} - G_{y^*y^*\gamma\delta}) e_{\gamma\delta},$$

$$Q_{-1} = G_{x^*y^*\gamma\delta} e_{\gamma\delta}, \quad Q_{-2} = G_{z^*y^*\gamma\delta} e_{\gamma\delta},$$

is obtained for the shift of the resonance peak. x^*, y^* and z^* are the l.s. coordinates. The formulas are suitable for a purely phenomenological

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The effect of uniform ...

determination of the spin-phonon interaction. The constants of the corresponding Hamiltonians are to be determined from paramagnetic sound absorption.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

SUBMITTED: July 16, 1962

Card 5/5

ACCESSION NR: AR4022448 S/0058/64/000/001/D034/D034

SOURCE: RZh. Fizika, Abs. 1D271

AUTHORS: Koloskova, N. G.; Kopvillem, U. Kh.

TITLE: Theory of nuclear acoustic resonance line shape in cubic crystals

CITED SOURCE: Sb. Fiz. probl. spektroskopii. T. 2. M., AN SSSR, 1963, 133-135

TOPIC TAGS: nuclear acoustic resonance, magnetoacoustic resonance, spin photon interaction, spin phonon interaction, line shape, line width, absorption line shape, isotropic exchange interaction, non-adiabatic moment

TRANSLATION: A quantum-statistical theory of magnetoacoustic resonance is developed. It is shown that a noncritical extension of the

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ACCESSION NR: AR4022448

deductions of the general theory of ordinary magnetic resonance to include the case of excitation of a spin system by resonant phonons leads to considerable errors. Whereas spin-photon interaction is described by a linear function of the spin variables, spin-phonon interaction is in many cases bilinear relative to the spin of the nucleus or of the ions. The commutation rules, which determine the specific form of the solution of the Schrodinger equation, therefore give rise to many distinguishing features of magnetoacoustic resonance. Explicit formulas are presented in the paper for the calculation of the shape of the absorption line. Unlike magnetic resonance, isotropic exchange interactions broaden the central part of the magnetoacoustic resonance line. The presence of dislocations in the sample also greatly affects the shape of the absorption line. The resonance absorption line width increases nonlinearly with increasing spin. The nonadiabatic moments of the absorption curve are calculated in the paper. U. Kopvillem.

DATE ACQ: 03Mar64 SUB CODE: PH ENCL: 00

Card 2/2

S/126/63/015/001/020/029
E039/E435

AUTHOR: Koloskova, N.G.

TITLE: The broadening of resonance lines by quadrupole-quadrupole interactions

PERIODICAL: Fizika metallov i metallovedeniye, v.15, no.1, 1963, 137-139

TEXT: The effect of quadrupole-quadrupole interactions on the shape of magnetic and acoustic resonance lines is examined. A system of N equivalent spins (electron or nuclear) with equivalent energy levels in a constant external magnetic field H is investigated. From the most general form of the Hamiltonian for interactions of the quadrupole-quadrupole type are determined expressions for the resonance absorption of energy from the magnetic field and the acoustic resonance for transitions $\Delta m = 1$ and $\Delta m = 2$ (m is the magnetic quantum number). In the case of nuclear paramagnetic resonance it is shown that the value of the tensor q (2nd rank) is

$$3eQ(1 - \gamma_{\infty}) \left[2S(2S - 1)\right]^{-1}$$

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The broadening of resonance ...

where γ_∞ is the antiscreening factor and S the spin.
For electron paramagnetic resonance

$$q^2 = 9e^2 (\bar{r}^2)^2 \cdot \alpha^2 \cdot \frac{1}{\epsilon}$$

where $\bar{r}^2$ is the mean square of the radius for d - electrons;
α is the Elliot-Stevens factor (Proc. Roy. Soc., A218, 1953, 553)
and ϵ is the effective dielectric constant. For

$$Cr^{3+}\left(\bar{r}^2 = 0.4 \cdot 10^{-16}\ cm^2,\quad \alpha = \frac{2}{105}\right)$$

in a simple cubic lattice with a lattice spin constant
$a = 6 \times 10^{-8}$ cm, $x \sim 1.6 \times 10^4\ \epsilon^{-2}$, x is the ratio of the second moments for quadrupole-quadrupole and dipole-dipole interactions. Concentrated electron paramagnetic quadrupole-quadrupole interactions can make a contribution which is comparable with that of dipole-dipole interactions. The formulae for spin-spin interactions through a phonon field are also comparable with those for quadrupole-quadrupole interactions. The ratio of widths

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The broadening of resonance ...

dependent on these interactions and the dipole-dipole are of the order

$$A^2 G_{11}^2 (R^2 g^2 \beta^2)^{-1}$$

where G_{11} is a value characteristic of the spin-phonon interaction. [Abstracter's note: The other symbols are not defined.] In the case of Fe^{2+} the contribution of these interactions is large.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina (Kazan' State University imeni V.I.Ul'yanov-Lenin)

SUBMITTED: June 26, 1962

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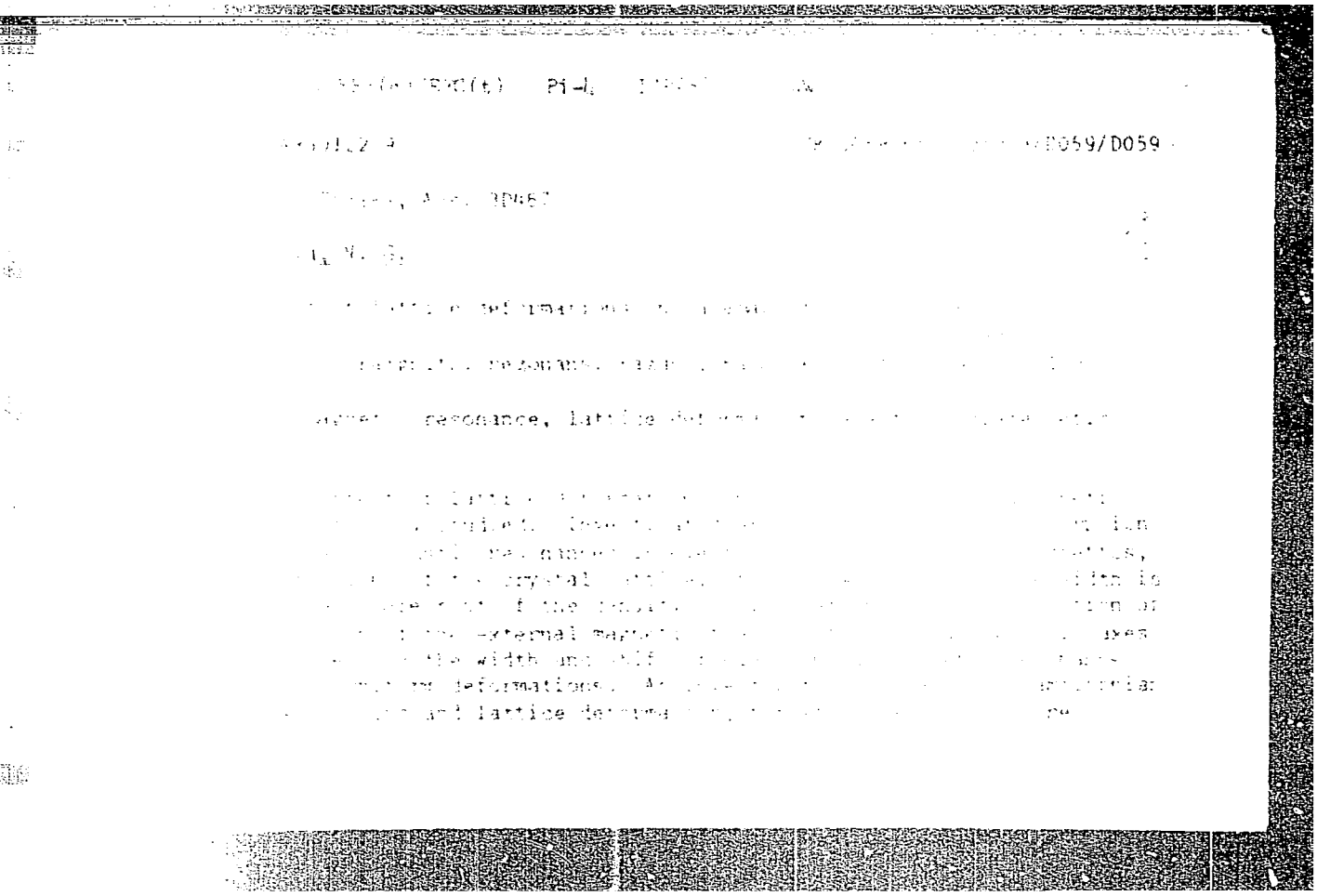

L 1314-66 EWT(1)/EPF(c) LIP(c) WW/GG

ACCESSION NR: AR5014398 UR/0058/65/000/004/D038/D038

SOURCE: Ref. zh. Fizika, Abs. 4D285

AUTHOR: Kolesnova, N. G.; Korepanov, V. D.; Kochelayev, B. I.

TITLE: Shape of the curve for the nuclear induction signal

CITED SOURCE: Sb. Itog. nauchn. konferentsiya Kazansk. un-ta za 1962 g. Kazan', Kazansk. un-t, 1963, 4-5

TOPIC TAGS: nuclear physics, nuclear resonance, resonance absorption, resonance line

TRANSLATION: The authors propose an explanation for the oscillating decay in the nuclear resonance signal based on the resonance absorption line $g(\nu)$ in the form $g(\nu) = A(\alpha^2 - \nu^2)^p$, where A and α are constants. The curve for $g(\nu)$ is rectangular at $p = 0$ and Gaussian at $p = \infty$. Methods are given for finding the parameters A, p and α. R. Yul'met'yev.

SUB CODE: NP ENCL: 00

Card 1/1

L 29547-66 EWT(1)/T IJP(c) WW/GG/GD

ACC NR: AT6014769 SOURCE CODE: UR/0000/64/000/000/0115/0133

AUTHOR: Koloskova, N. G.

ORG: none

TITLE: Effect of lattice deformation on paramagnetic resonance

SOURCE: Paramagnitnyy rezonans (Paramagnetic resonance); sbornik statey. Kazan, Izd--vo Kazanskogo univ., 1964, 115-133

TOPIC TAGS: electron paramagnetic resonance, crystal lattice deformation, crystal lattice dislocation

ABSTRACT: The effect of lattice deformation on the paramagnetic resonance spectrum is analyzed in detail. The symmetry properties of the electric field at the paramagnetic center in a crystal are used as a basis for setting up the operator which describes interaction between spins and lattice deformations. Expressions are derived for the energy of this interaction. These expressions are quadratic with respect to spin variables and linear with respect to components of the tensor of deformations $e_{\gamma\delta}$ for tetragonal, rhombic and triagonal symmetries, biquadratic with respect to spin variables and linear with respect to $e_{\gamma\delta}$ for cubic symmetry, and quadratic with respect to $e_{\gamma\delta}$ and spin variables for the two most interesting cases: cubic symmetry and triagonal symmetry with a center of inversion. The method of moments is used for studying the

Card 1/2

Application of radiograph[illegible] the dis-
tribution of sulfur in rubber mixtures [illegible]
M. V. Kovsikova, [illegible]
Kolloid. Zhur. 18 [illegible]
rubber were mixed [illegible] by a
different methods of mixing; then films (1 mm. thick) were
prepd. from these mixt[illegible]
graphic plates. [illegible]
fields 3 X 3 mm., and from the differences [illegible] the
uniformity of the distr[illegible]
and represented in gr[illegible]
in more unif[illegible]
18, 611-6 (1956)(Engl. translation). [illegible] L. Bikerman [illegible]

2 [illegible]

SHABAROV, Yu.S.; POTAPOV, V.K.; KOLOSKOVA, N.M.; PODTEREBKOVA, A.A.; SVIRINA, V.S.; LEVINA, R.Ya.

Cyclopropanes and cyclobutanes. Part 38: Nitration of 2-substituted phenylcyclopropanes. Zhur. ob. khim. 34 no.9:2829-2832 S '64. (MIRA 17:11)

1. Moskovskiy gosudarstvennyy universitet.

KOLOSKOVA, N.S.

In schools of communist labor. Vest. sviazi 25 no.7:23-24 Jl '65.
(MIRA 18:8)

1. Sekretar' partiynoy organizatsii tsekha magistral'nykh svyazey TSentral'nogo telegrafa SSSR.

KERNES, I.Ya.; KOTEL'NIKOVA, L.A.; LEMAN, T.R.; SHTUTINA, A.M.; KINKUL'KIN, A.T., retsenzent; KOLOSKOVA, P.P., retsenzent; SEMENKOV, V.N., retsenzent; ITKIN, M.L., red.; MASONOV, Yu.I., red.; ZELENTSOVA, Ye.I., tekhn. red.

[Sociology; recommended list of literature for the aid of the teacher] Obshchestvovedenie; rekomendatel'nyi ukazatel' literatury v pomoshch' uchiteliu. Moskva, Izd-vo Vsesoiuznoi knizhnoi palaty, 1963. 145 p. (MIRA 16:3)

1. Moscow. Gosudarstvennaya publichnaya istoricheskaya biblioteka. 2. Nauchno-bibliograficheskiy otdel Gosudarstvennoy publichnoy istoricheskoy biblioteki (for Kernes, Kotel'nikova, Leman, Shtutina). 3. Zaveduyushchiy sektorom obucheniya istorii Instituta obshchego i politekhnicheskogo obrazovaniya Akademii pedagogicheskikh nauk RSFSR (for Kinkul'kin). 4. Uchitel' sredney shkoly No.204 Timiryazevskogo rayona Moskvy (for Koloskova). 5. Starshiy inspektor Upravleniya prepodavaniya obshchestvennykh nauk Ministerstva vysshego i srednego spetsial'nogo obrazovaniya SSSR (for Semenkov).

(Bibliography--Sociology)

ACC NR: AP7003902 SOURCE CODE: GE/0030/67/019/001/0441/0451

AUTHOR: Boyarskaya, Yu. S.; Koloskova, V. G.; Zhitaru, R. P.

ORG: Institute of Applied Physics, Academy of Sciences of the Moldavian SSR, Kishinev

TITLE: Effect of different lattice defects on the mobility of dislocations in alkali halide crystals

SOURCE: Physica status solidi, v. 19, no. 1, 1967, 441-451

TOPIC TAGS: alkali halide, lattice defect, crystal dislocation, sodium chloride, ~~crystal~~, potassium chloride, ~~crystal~~ dislocation mobility, x ray irradiation, irradiation effect

ABSTRACT: Potassium chloride and sodium chloride single-crystals were subjected to additive coloration treatment and x-irradiation. Conditions under which hardening and softening of these crystals occur were established. It was found the F-centers and colloids have no appreciable effect on dislocation mobility. It is suggested that several types of defects due to soft irradiation which are possibly connected with the capacity of this irradiation to generate vacancies in the

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ACC NR: AP7003902

crystal lattice are responsible for the hardening of irradiated NaCl crystals. Orig. art. has: 9 figures and 3 tables. [Authors' abstract] [DW]

SUB CODE: 20/SUBM DATE: 29Oct66/ORIG REF: 012/OTH REF: 014/

Card 2/2

GRISTAN, Ye.L.; TURETSKIY, Ya.M.; Prinimali uchastiye: KOLOSKOVA, V.G.; PESHINA, M.A.; YAKOVLEVA, N.I.; VAYKHEL', A.A.

Dressing iron ores and retreating magnetite concentrates by the re-flotation method with anion collectors. Gor. zhur. no.12:47-40 D '61. (MIRA 15:2)

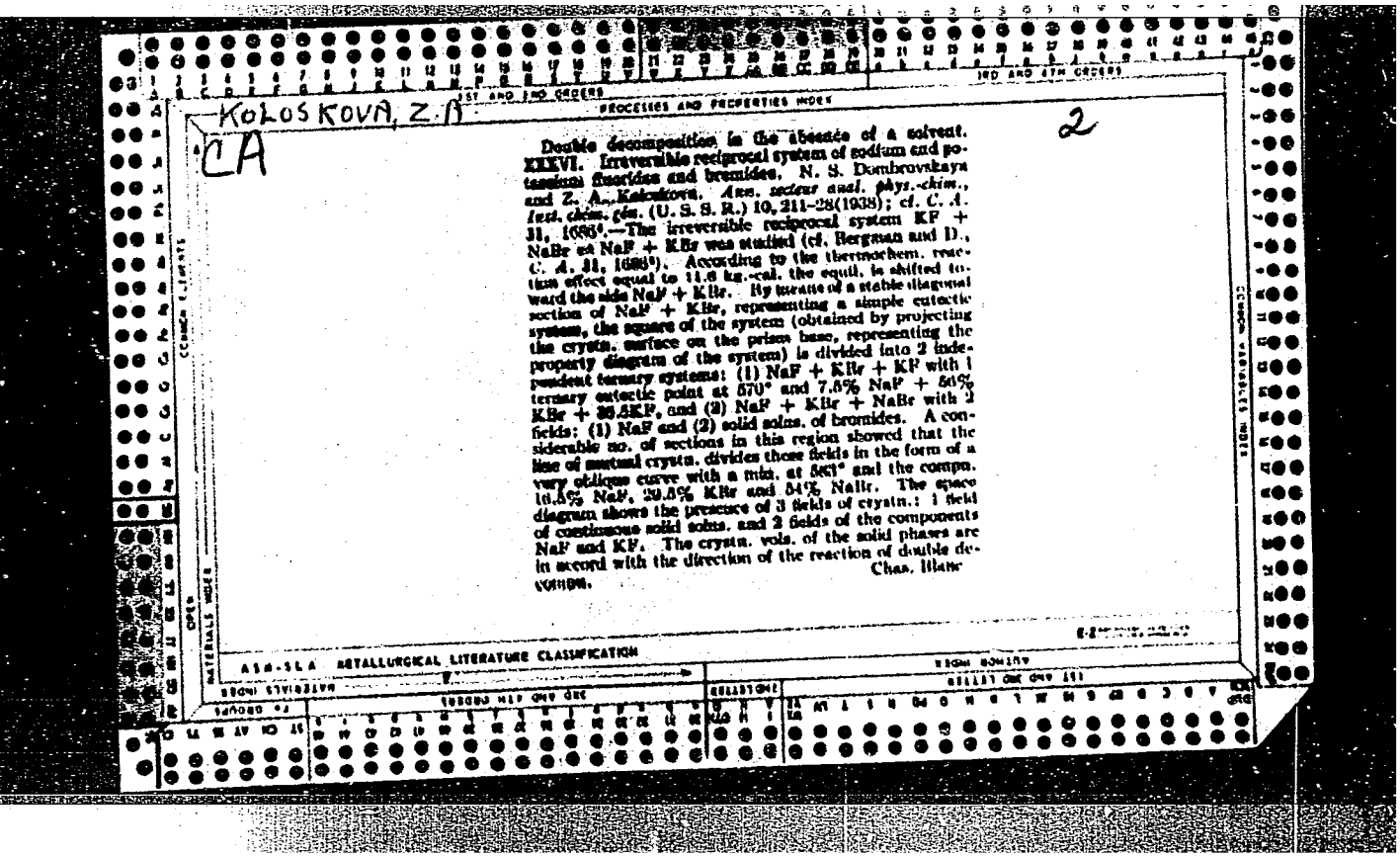
1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii im. I.P.Bardina, Moskva.
(Iron ores)
(Flotation)

KOLOSKOVA, V. R.; Chebotarev, R. S.; Arkhipov, V. V.;

(Dept of Parasitology and Invasive Diseases, Sverdlov Agr Inst)

" Testing of phenothiazine in the fight against parasitic diseases of animals. "

SOURCE: Veterinariya (Table of Contents), Vol 22, No 6, June 1945, Uncl



KOLOSKOVA, Z. A.

CA

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PROCESSES AND PROPERTIES INDEX

Double decomposition in the absence of a solvent. XXXVI. Irreversible reciprocal system of sodium and potassium fluorides and bromides. N. S. Dombrovskaya and Z. A. Koloskova. *Ann. secteur anal. phys.-chim., Inst. chim. gén.* (U. S. S. R.) 10, 211–28(1938); cf. C. A. 31, 1686⁹.—The irreversible reciprocal system KF + NaBr ⇌ NaF + KBr was studied (cf. Bergman and D., C. A. 31, 1686⁹). According to the thermochem. reaction effect equal to 11.6 kg.-cal. the equil. is shifted toward the side NaF + KBr. By means of a stable diagonal section of NaF + KBr, representing a simple eutectic system, the square of the system (obtained by projecting the crystn. surface on the prism base, representing the property diagram of the system) is divided into 2 independent ternary systems: (1) NaF + KBr + KF with 1 ternary eutectic point at 570° and 7.5% NaF + 50% KBr + 39.5KF, and (2) NaF + KBr + NaBr with 2 fields; (1) NaF and (2) solid solns. of bromides. A considerable no. of sections in this region showed that the line of mutual crystn. divides these fields in the form of a very oblique curve with a min. at 561° and the compn. 16.5% NaF, 29.5% KBr and 54% NaBr. The space diagram shows the presence of 3 fields of crystn.: 1 field of continuous solid solns. and 2 fields of the components NaF and KF. The crystn. vols. of the solid phases are in accord with the direction of the reaction of double decomposition.

Chas. Blanc

KOLOSKOVA, Z.A.

5(2),(3) PHASE I BOOK EXPLOITATION SOV/2554

Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk. Komissiya po khromatografii

Issledovaniya v oblasti ionoobmennoy, raspredelitel'noy i osadochnoy kromatografii (Studies in the Field of Ion Exchange, Distribution and Precipitation Chromatography) Moscow, Izd-vo AN SSSR, 1959. 150 p. Errata slip inserted. 3,500 copies printed.

Ed. of Publishing House: M.G. Yegorov; Tech. Ed.: I.N. Guseva; Editorial Board: K.V. Chmutov, Corresponding Member, USSR Academy of Sciences (Resp. Ed.); F.M. Shemyakin, Professor; K.M. Ol'shanova, Professor; K.M. Saldadze, Docent, and N.N. Tunitskiy, Professor.

PURPOSE: This book is intended for chemists and chemical engineers.

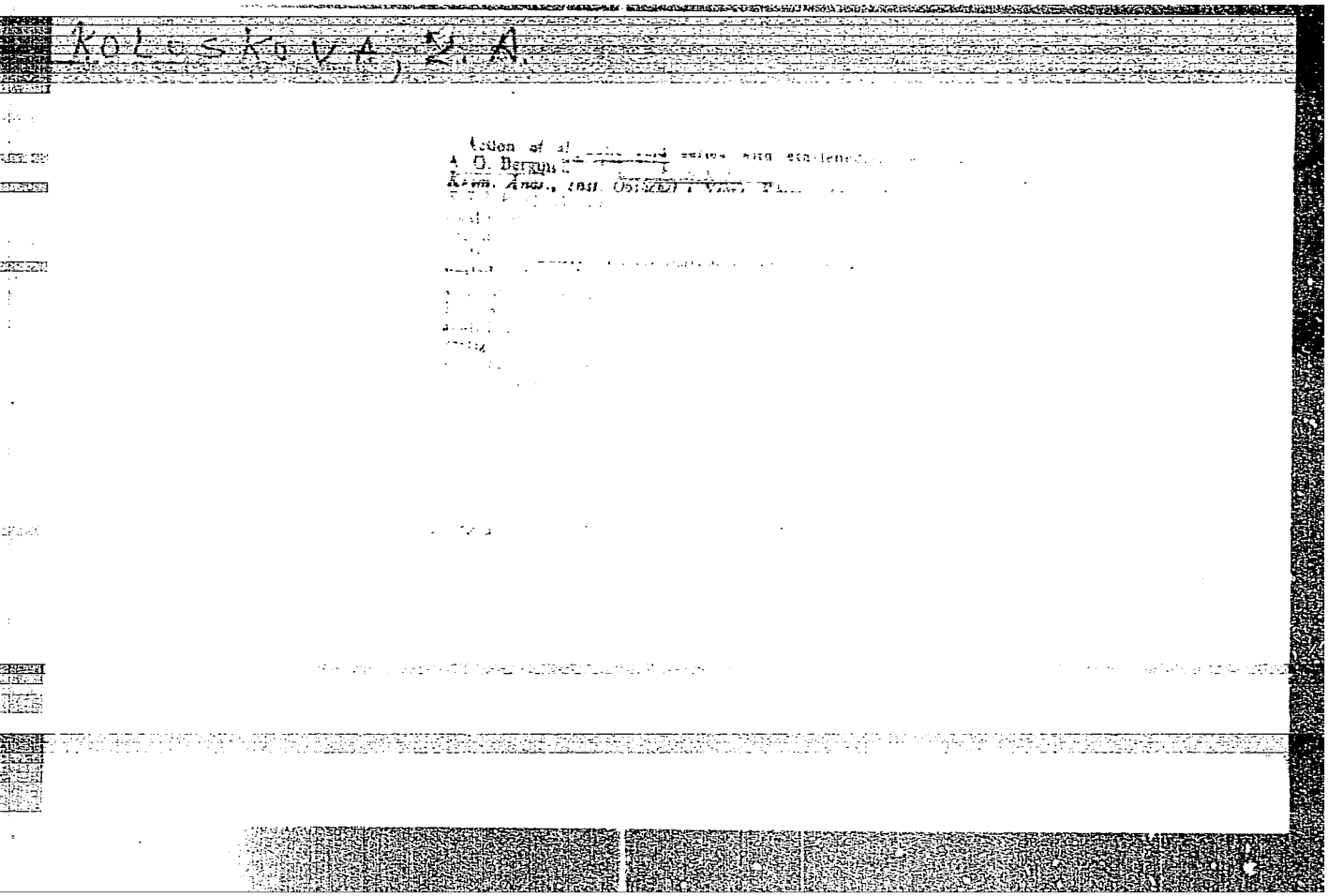
COVERAGE: The book discusses studies in ion-exchange, distribution, and precipitation chromatography. Various problems of the theory of chromatography and its application are also considered. This is the 4th collection of articles published by the Committee on Chromatography. The first collection was published in 1952 under the title: "Issledovaniya v oblasti khromatografii" (Studies in the Field of Chromatography); the second was published in 1955 under the title "Teoriya i praktika primeneniya ionoobmennykh materialov" (Theory and Practice of the Use of Ion-exchange Materials); and the third was published in 1957 under the title "Issledovaniya v oblasti ionoobmennoy khromatografii" (Studies in the Field of Ion-exchange Chromatography). No personalities are mentioned. References are given after most of the articles.

KOLOSKOVA, Z.A.

DOMBROVSKAYA, N.S.; KOLOSKOVA, Z.A.

Singular irreversible-reciprocal system with silver and potassium nitrate and iodide stratification. Izv.Sekt.fiz.-khim.anal. 22:178-195 '53. (MLRA 7:5)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova Akademii nauk SSSR.
(Nitrates) (Iodides) (Systems (Chemistry))



KOLOSNE PETHES, Edit

Determination of the rutin- and total flavonoid content of Viola arvensis during the vegetation period. Acta pharm. Hung. 35 no.5:225-230 S '65.

1. Submitted November 27, 1964.

KOLOSNICHENKO, I.N.

Some remarks on the engineer's handbook ("Handbook for motorcar locomotive engineers." L.L. Gal'perin, V.A. Kurchashov. Reviewed by I.N. Kolosnichenko). Elek. i tepl. tiaga no.4:3 of cover Ap '57. (MLRA 10:6)

(Railroad motorcars) (Gal'perin, L.L.) (Kurchashov, V.A.)

32(3)

SOV/112-59-2-3079

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 2, p 120 (USSR)

AUTHOR: Kolosnichenko, I. N.

TITLE: Protection of Motor-Car Equipment Against Short-Circuit Currents (Zashchita apparatury motornykh vagonov ot tokov korotkogo zamykaniya)

PERIODICAL: Elektr. i teplovozn. tyaga, 1958, Nr 1, pp 26-28

ABSTRACT: Protection of motor-car equipment and the contact wire against short-circuit currents as used at the Severnaya Railroad is reported. To avoid damage to the contact wire by taking off a current-carrying pantograph, the protective system permits lowering the pantograph on a faulted car only after the section has been cut off by a high-speed circuit-breaker at the substation. The basic circuit diagram of the protection is shown in the figure. The metal supports of the roof insulators (2) to which the pantograph (1) is fastened are insulated by the gaskets (3) from the supporting columns and are interconnected by a bus (4); the bus is connected to the type RP5 grounded overload relay (6).

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Machinist-Instructor, Motorcar Depot Moscow III Severnoy dorogi

Protection of Motor-Car Equipment Against Short-Circuit Currents

The blocking part of the relay receives one additional contact; its reset coil should be disconnected or dismantled. In case of a breakdown or flashover of the roof insulator, the relay operates and the block-contact (9) cuts the control-desk pantograph circuit from the train wire (26); the block contact (10) closes and prepares a new circuit from the train wire (15). After the substation circuit-breaker has operated, the contact wire is deenergized, the relay (6) drops out, closing by its contact (8) the prepared circuit, and the pantograph can be lowered. The pantograph raising is possible only after the engineer has reset the relay (6) manually. To ensure reliable operation of the substation circuit-breaker in case of a high-voltage breakdown in under-car equipment cabinets, a short-circuiting switch (13) is used; an MK 310 electromagnetic contactor is used as such a switch. For this reason, the common bus (5) connecting the control-equipment cabinets is connected with the relay (6) via a second overload relay (11) of the same type. On insulation breakdown in one of

Protection of Motor Car Equipment Against Short-Circuit Currents

the cabinets, the relay (11) operates and energizes the contactor (13) by its block (12). The contactor closes and connects the blade of the main disconnecting switch with the relay (6) which ensures a reliable short-circuit. The remaining functions of the scheme are similar to those in the first case. To prevent opening the contactor under short-circuit conditions (it is not designed for them), the contactor is sealed-in through its own contact and the contact (7) of the relay (6); the contactor remains closed up to the moment when the relay (6) drops out which occurs when the contact wire is deenergized. The above scheme was tested in actual operation for two years and is being recommended for wider adoption.

B.N.G.

KOLOSNICHENKO, I.N., mashinist-instruktor; LAPIN, N.A., starshiy mashinist

What is suggested by operational experience with the 8^{r} series of electric units. Elek. i tepl. tiaga 2 no.4:33-36 Ap '58 (MIRA 12:3)

(Electric railroads)